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ABSTRACT

To respond to local industry training needs, Broome Community College (BCC), in Binghamton, New York, has long provided long and short term training, workshops, seminars, and credit courses for regional companies and forged ongoing partnerships with local businesses. One such partnership has been formed with Universal Instruments (UI), a manufacturer of automation equipment for electronics assembly and testing. The partnership has adapted the concepts of Tech Prep education to establish a non-credit certificate program in applied technology at UI. The six-course program is targeted at UI employees without college degrees working in technical positions and offers instruction in math, principles of technology, communication, and problem-solving. A total of 36 students were placed in the initial certificate program, the graduates of which are eligible to enter one of several Associate in Technology degree programs at BCC which are designed to maintain a competent and skilled workforce. The certificate program uses video tapes, hands-on and laboratory experiences, and applied academics, rather than traditional lecture methods, and results have been encouraging. Employee feedback has been extremely positive and UI officials have indicated that updated employee skills have been a tremendous asset to the company. (BCY)

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Corporate Training and Tech Prep

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1. **Background:**

The Southern Tier of New York State is a nine-county region extending along the New York-Pennsylvania border, more than 150 miles from east to west and roughly 50 miles from north to south, with most of the population and economic activity centered around the Susquehanna and Chenango river valleys. Binghamton, the region's largest city, is located at the junction of those Rivers, and Broome Community College (BCC) is located just outside Binghamton.

Universal Instruments is a subsidiary of Dover Electronics in Binghamton. Universal manufactures automation equipment for electronics manufacturing assembly and testing of electronic circuits, software and computer-controlled electronics manufacturing equipment. The partnership developed between BCC and Universal is the only one of its kind in the country, and its development is explained herein.

2. **Needs Assessment:**

Broome Community College conducts ongoing formal and informal assessment of education/training needs in the region. Several written assessments of training needs have been conducted in the past two years, by the BCC Center for Community Education, the BCC Division of Technologies, Engineering and Computing and the local Technology Development Organization. In addition, a simple assessment is completed by all participants in Community Education programs.

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The College sponsors several advisory boards including Community Education's Corporate Service Advisory Board and the Tech-Prep Consortium. Representatives of the College meet on a regular basis with the NYS Department of Economic Development, Broome County Partnership 2000 and the Southern Tier Manufacturing Alliance. Through these various means, the College conducts continuous assessments of the educational and training needs of the region.

According to a needs assessment report titled *Tomorrow's Jobs, Tomorrow's Workers*, produced by the New York State Department of Labor in 1991 and 1992, "Education will continue to be the key to finding and keeping a good-paying job. . . In addition, technological change in the workplace is increasing the skills needed to perform most job duties." According to the report, demographic trends indicate that Southern Tier employers experience difficulty finding qualified workers to fill available positions. A decrease in defense and electronics related jobs in the region presents an increasing demand for retraining the work force for expansion into diversified manufacturing jobs. An effective way to provide this retraining is through the formation of partnerships between industry and education. A pilot needs assessment conducted by BCC faculty at Universal Instruments revealed the need for substantial retraining and upgrading of the skills of the company's existing talent.

3. **Service delivery**:

Broome Community College has for many years been dedicated to providing long and short term training, workshops, seminars and credit courses for regional companies and their employees. More than 6,000 people attend largely career related credit courses in more than 31 program areas on a full or part time basis. An additional 10,000 people take part in non-credit career related educational programs sponsored by BCC's Center for Community Education. In 1993, more than 30 contract courses were offered at local companies. These training programs ranged from basic computer courses to specific job related courses such as Decontamination of

Waste Materials. Community members can also access Community Education training to become professionals in fields not requiring full degree programs such as phlebotomy and alcoholism counseling.

The College has forged significant ongoing partnerships with local business and industry. Examples include a partnership with IBM to provide needed training in CAD/CATIA; credit courses toward a degree in Mental Health offered at United Health Services; Total Quality Management training for a consortium of eleven small companies in the region; and the Tech Prep Consortium, combining forces with business, industry, education and government.

4. **Use of Technology**:

In response to a national demand for higher performance from the American work force, educational and corporate leaders are promoting Tech Prep, a major education reform movement aimed at providing continuity of learning and quality educational opportunities for all students. Tech Prep challenges students and effectively prepares them to live and work in a highly technological society, while providing the type of work force the country needs to compete in a global economy. "Applied Academics" in mathematics, science, and communications form a strong academic foundation for the Tech Prep curriculum which enables students to understand complex instruction, technical equipment and new skill requirements in work environments. The programs prepare students for high-skill technical occupations and allow direct entry into the workplace after high school graduation or completion of an Associate Degree program.

The same Tech Prep concepts have been adapted by BCC for use as a non-credit Certificate Program in Applied Technology at Universal Instruments. That pilot program, totally unique in nature, is targeted toward Universal employees without college degrees holding technical positions in manufacturing, fabrication and engineering. Successful completion of the six-course program (in math, principles of technology, communication and problem solving) prepares the employee to enter one of several Associate in Technology degree programs at

Broome Community College. The Applied Technology program helps insure that Universal Instruments retains a competent and skilled work force, capable of adapting to the expanding technological needs of the company. The model is one that can easily be replicated, on site, at a variety of companies throughout the region. It prepares employees and companies to diversify manufacturing lines and strengthen strategies for continuous improvement within the organization.

The American Society of Training and Development and the United States Department of Labor have recognized the need for higher skills at lower levels in organizations and the need for all workers to perform high value-added work. By all estimations, US companies need to upgrade the skills of the front-line worker to remain globally competitive. The BCC Applied Technology Program at Universal Instruments assures that company a competent and skilled work force, capable of carrying them into the 21st century.

5. **Uniqueness of Program**:

The Tech Prep model developed by Dale Parnell in his book, *Tech Prep Associate Degree, a Win/Win Experience*, discusses the use of "applied academics" as an alternative to teaching math and science to "concrete learners"(those learners more receptive to applications than to pure theory). The model was primarily developed to improve the skills of middle quartile high school students and has been used effectively in several states, North Carolina, Texas and Oregon particularly. Locally, the Greater Broome Tech Prep program received an Exemplary Program Award at the CEA/NY & CEA/PA Combined Anniversary Conference in October, 1993. The decision to offer the program through training courses at an industrial site was conceived by members of the BCC Technologies Division and the Tech Prep Consortium.

Realizing that Universal Instruments fit the target group of the Tech Prep model, a special math test was prepared to assess math skills of 134 workers who volunteered to be part of the new certificate program. After taking the test, 20 employees were chosen to begin *Applied*

Math I and 16 others were placed in *Principles of Technology I* (an applied physics course). The courses use video tapes, hands-on and laboratory experiences, or "applied academics" instead of traditional lecture methods of instruction. Instructors were specially trained by Tony Martinez from Leander High School in Austin, Texas, which as been involved in Tech Prep and applied academics for over six years. Both courses use material developed by the Center for Occupational Research and Development (CORD) in Waco, Texas. A new "classroom" was developed to accommodate the hands-on learning and laboratory exercises required. Thousands of dollars have been invested by Universal Instruments to create this unique teaching environment and to purchase necessary laboratory equipment.

6. **Leadership:**

This program is unequaled in its adoption of the Tech Prep model to the retraining of a specific work force. Under the leadership of BCC administrators and professors, and with the partnership and support of Universal Instruments management and work force, the program is the only one of its kind. The College's goal of assisting in the retraining of the company's most valuable resource, its employees, is being met beyond all expectations. Universal Instrument's goal of retraining its current work force and upgrading skills is the foundation for building and revitalizing the area's economy. The College has worked diligently to encourage area businesses to look beyond the current business trough and focus on the long-term mismatch between projected job demand and a growing shortage of qualified workers. Changing demographics and the increasing complexity of the workplace make training and retraining the work force critical.

7. **Outcomes:**

Overall outcomes of the Greater Broome Tech Prep/Universal Instruments partnership have already been discussed: A competitive work force geared to the changing needs of industry in the region. The company's vision in realizing those needs, combined with BCC's leadership and creativity in providing the necessary educational tools, has in a short period of time made

giant strides toward producing precisely the company described in Universal's Corporate Vision: "To have Universal Instruments Corporation recognized by customers as a world-class provider of high performance, best value automation solutions, and technology for electronic circuit assembly world wide."

On a cognitive level, corporate and student outcomes are more obvious and specifically measurable. One group of students will complete *Principles of Technologies* I and II or equivalent in Spring 1994, and will enroll in *Applied Math* III in Fall 1994. That group will be eligible for admission to Broome Community College in Spring 1995. Employee feedback has been extremely positive, and as the President and Manager of Training and Development point out in their letters, updated employee skills have been a tremendous asset to the company.